

USGS Storm Response Plan

May 25, 2013

1. Background

The USGS Coastal Storm Response Team was established in 2006 to ensure that the Bureau response and recovery to coastal storms is consistent, thorough, incorporates all Bureau resources and assets, and provides the information needed by those who make science and safety decisions. In 2008, the Team was renamed the USGS Storm Response Team to incorporate response activities to both coastal and inland storms generated by any meteorological event that is likely to result in major riverine or coastal flooding, severe wind damage and erosion, ecosystem distress, or threats to life, property, and ecosystems over a wide area. Typically these types of meteorological events extend over more than one state such as hurricanes, large frontal or tropical storms, severe 'northeaster' type storms, or atmospheric rivers and monsoons in the western United States. These types of storm events usually require USGS resources in excess of those readily available at the Science Centers involved with the event.

2. USGS Storm Response Team

The USGS Storm Response Team (SRT) is a large, multi-layered group of employees that is activated, as necessary, in response to severe weather events. The USGS Storm Team organizational chart (Page ?) is composed of the SRT, the field-based first-response of USGS mission activities, and a Science Team that is activated, as needed, to formulate, coordinate, and investigate scientific issues that arise after a significant storm. The SRT is led by a Storm Team Leader, and activities and members of this team vary depending on the location, duration, and intensity of the storm event. The Science Team is led by a Science Team Leader, and activities of this team are guided by the scientific questions raised in the aftermath of a significant storm. Each team has sub-teams for specific efforts. Teams are disbanded by the respective Team Leader after the team function has run its course after any given storm event.

The Storm Response and Science Team Leaders are members of the USGS Hazard Response Executive Committee (HREC), when storm teams are activated. The function of the HREC is to provide executive direction and oversight of USGS mission activities at the national level to effectively manage hazard response resources, communications, and information, without interfering with the activities of the programs or response teams.

The SRT is composed of employees from all levels of the USGS and (at times) partner agencies, and may include scientists and managers from all disciplines in the area affected by the storm event, as well as Center, Region, and Headquarters managers and staff, technical specialists, or scientists who have program or management responsibilities in the affected area. The Storm Team Leader has the responsibility to see that the SRT provides daily support and coordination to the various responding USGS offices and partner organizations through the Field Response Team (FRT). The Office of Surface Water (OSW) is responsible for technical leadership of field response to both coastal storm tide and inland flooding. For storm tide response OSW will enlist a Storm Tide Monitoring POC from a water science center to coordinate and monitor storm tide field team logistics and activities. For inland storms resulting in riverine flood events, the National Flood Coordinator from OSW assumes the role of the Storm Team Leader and the SRT and FRT are often coincident in their makeup. The name for each FRT is the same as the name given to the storm itself (e.g., the team name associated with Hurricane Alberto would be the Hurricane Alberto Team) or the geographical identifier and date (e.g., the 2008 Upper Midwest Floods).

The primary activities of the SRT are conducted in the field by the members of the FRT. Composition of the FRT is dependent on the characteristics of the storm or hurricane (direction, projected landfall, speed, category, and intensity) and antecedent conditions in the potential impact area. Science Centers not enlisted

in the FRT through storm attributes may be drafted into the FRT if they possess expertise and/or equipment essential to a comprehensive bureau response. The main responsibility of the FRT is to carry out scientific data collection, analysis, and interpretation, as determined by USGS mission requirements and the SRT through its interaction with partner agencies. Active participation in the FRT by Science Centers and Offices will change as the storm runs its course. Membership of each FRT may include:

- Bureau Storm Team Leaders, Regional Coordinators, and HQ POCs
- Science Centers and Offices in all States affected by the storm
- Science Centers, Offices, and Programs that provide complimentary science, administrative services, or management support
- Chair, or designee, of the Geospatial Information Response Team (GIRT)
- Disaster Response Coordinators from EROS
- A member(s) of the HREC
- Partners from other Federal agencies
- National Weather Service Meteorologist

3. Responsibilities of the Storm Response Team

Major storms can cause catastrophic failure of communications systems and other infrastructure, resulting in a level of chaos; increased risk to employee and public safety; a loss of coordination between local, regional, and national offices without the normal lines of communication; uncertainty about employee status; and the potential for duplicate efforts and expenditures. The SRT operates under existing guidelines and policies, thereby enabling the safety of USGS employees and their families, USGS property, and ongoing research. Functions of the Team include:

- Coordination of USGS activities at the National, Regional, and Center or Office levels to effectively manage response resources, communications, and information.
- Coordination of USGS activities with sister DOI and other Federal agency activities in the storm-impacted region.
- Coordination of activities with the National Response Framework (NRF) and Emergency Support Functions (ESF), when activated by the White House.
- Coordination of timely and effective communications with Bureau, Departmental, and other agencies that are involved in the storm event; the print and broadcast media; and the general public.
- Production of daily reports documenting the activities undertaken, accomplishments achieved in response to the event, and employee status.
- Analysis of post-storm lessons learned, and integration of appropriate lessons into storm team operations.
- Facilitation of an organized analysis of specific storm impacts on the environment and ecosystems, when appropriate.
- Documentation and justification of USGS expenses requested through the Federal Appropriations process.

4. Pre-Season Activities

Preparation for responses to major storm events should be on-going. However, several activities should be completed prior to February 15 of each year. Some of these activities include:

- Issue policies, guidance, and team operating procedures regarding response activities
- Assign and publish storm-response roles and responsibilities
- Establish and publicize employee reporting structure
- Update Continuity of Operations and contact lists

- Water Science Centers should update their flood plan
- The Office of Surface Water will update and distribute the storm-tide deployment standard operating procedures
- Update storm team membership list for communicating storm response activities
- Establish Points of Contact (POCs) with other Federal agencies
- Inventory and organize equipment caches and locations of anticipated equipment at Science Centers outside of the storm impact area that can be identified for immediate deployment, as necessary

5. Activation of the Storm Response Team

The Storm Team Leader will monitor meteorological conditions in the Atlantic and Pacific Oceans, and upon development of a major coastal storm, will notify the Chair of the HREC (Deputy Director), the USGS Emergency Management POC, and the appropriate Regional Director(s) of the approaching storm. The National Flood Coordinator (NFC) will monitor for major inland storms or snowmelt conditions with flood-inducing potential that would be characterized as “Major” from the National Weather Service definition. The NFC will notify the Chair of the HREC, USGS Emergency Management POC, and the appropriate Regional Director(s) of the flood potential.

Atlantic storms will be monitored from the vantage point of Puerto Rico, typically the most forward location with USGS assets on an Atlantic storm track. All of the following factors will be considered in the decision of if and when to activate the storm response team:

- storm intensity
- forecasted storm surge
- storm surge vulnerability (of predicted landfall area)
- coastal accessibility (of predicted landfall area)
- critical infrastructure (in predicted landfall area)
- EPA vulnerability index (ecosystems, fisheries, agriculture, etc.)
- rainfall forecasts
- inland flood forecasts

In general, three days prior to projected landfall or beginning of the storm, a recommendation will be made to the HREC Chair for activation of a SRT, unless the NRF has already been activated. An HREC meeting will be convened after the decision to activate a SRT. The purpose of this meeting will be to brief all members of the HREC on the projected storm path, intensity, and damage; planned storm team response membership and activities; logistics of the daily conference calls; and the need to plan for expending extraordinary resources. Daily afternoon briefings of storm team activities will be conducted for the HREC by the SRT and Science Team Leaders, as needed. The Storm Team Leader will notify all team members via email of the decision to activate a SRT generally at least 48 hours prior to predicted landfall. The FRT will remain in existence during the entire extent of the storm threat, and the continuity of the team will not be affected by the storm moving across Regional boundaries. Membership of the FRT will change as the storm moves inland or as it expands in size and area, but the FRT will stay intact until USGS response to the impact of the storm returns to normal day-to-day operations. Only then will the FRT be disbanded by the Storm Team Leader with concurrence from the HREC Chair.

Inland flooding often results from coastal storms. During the approach and immediately after landfall of the coastal storm, the National Flood Coordinator (NFC) will coordinate the inland flood response as part of the overall SRT coordination process. This may or may not require separate coordination phone calls outside of the SRT coordination calls. Responsibilities and operational details for inland flood response are provided in the USGS Flood Response Plan.

A flood water quality (FWQS) subteam may be formed to address the urgent water quality information needs for regional scale coastal or riverine floods or floods of national importance. The FWQS subteam will be led by a National Water-Quality Flood Coordinator (NQWFC) within the Office of Water Quality. Operational details and responsibilities for the FWQS subteam are provided in a Water Mission Area Technical Memorandum and Office of Water Quality Technical Memorandum.

6. Activation of the Science Team

Major coastal storms, as well as inland storms, can have an enormous and long-term impact on the physical, ecological, social, and economic structure of the affected area. USGS provides both immediate and long-term scientific support for impact and risk assessments and for assessments of the effectiveness of proposed response and recovery actions. Typically, this support is provided by individual Programs, Mission Areas, and Science Centers in the affected area. For certain events such as Hurricane Katrina or Sandy, however, the scale of the effort or the severity of the storm impact is substantial enough that the capability of individual Mission Areas, Programs or Science Centers to provide the needed support is exceeded. For these major events, a sustained well-coordinated and interdisciplinary effort is required. Activation of the Science Team will be initiated when there is a need to coordinate significant scientific resources across Centers, Regions, Programs, and Mission Areas.

The Science Team will be activated by the HREC as short- and (or) long-term science needs dictate. Membership of the Science Team will vary depending on the nature of the storm and the science required to meet response and recovery needs. Topical areas typically addressed for storm response and recovery and the topical leader include:

- **Geographic Analysis and Vulnerability Assessment** – Jonathan Smith
- **Hydrologic Analysis** – Robert Mason
- **Landscape Changes** – John Haines
- **Ecological Impact** – Colleen Charles
- **Contaminants in Water, Sediment, and Biota** – Donna Myers
- **Environmental Health** – Herb Buxton

The HREC Chair will activate the Science Team based on input from the Storm Response and Science Team Leaders, and the Science Team Leader will convene a meeting or conference call of the topical leaders to design a science response plan. The Science Team Leader, with the assistance of the HREC, will determine availability and sources of funding and will ensure that sufficient Bureau assets are available to implement the plan. The topical leaders will be responsible for implementing the plan through existing Programs and Science Centers. The Science Team will meet as needed to ensure that all scientific activities are appropriately coordinated and to address any changes needed in the plan. The Science Team will remain active until all elements of the science plan are completed and products delivered. The Science Team Leader will frequently brief the Director and the HREC concerning the activities of the Science Team and progress made on implementing the science plan. The Science Team Leader will disband the Science Team with concurrence from the HREC Chair.

7. Concept of Operations

a. Atlantic & Gulf of Mexico Storms

The Storm Team Leader will monitor storms that may eventually become a threat to the U.S. When storms reach tropical storm status daily watch messages will be sent to the HREC, Science AD's, RD's, Office of Surface Water (OSW) and other designated individuals. When storm track and strength is better defined and

SRT activation appears likely, daily watch message distribution will be expanded to the full SRT, typically 4 to 5 days before anticipated first landfall in the U.S.

When the Storm Team is activated (approximately 48 to 72 hours before anticipated landfall) the Storm Team leader will initiate a daily conference call normally at 0900 Eastern Time with members of the Field Team to discuss logistics and team work schedules. Calls will start with a briefing from NOAA that covers predicted storm track, intensity, category, and precipitation forecasts. Field team members are expected to provide concise oral and written (if requested) reports on actual and planned activities of their unit. Participants are expected to be clear and concise with their comments and provide information on office/infrastructure and employee status, facility, vehicle, or equipment damages, significant technical and administrative activities, and needs and (or) resources available. To make calls as short and efficient as possible, the Storm Team leader will provide electronic means (App or Website) for the daily reporting of numbers (personnel deployed, vehicles deployed, instruments deployed, etc.). Conference calls will continue on a regular basis (determined by the Team Leader) until the team is disbanded.

If needed, a Storm-tide Surge Sensor (SSS) subteam may be formed to address the different and sometimes more urgent SSS deployment information needs. The SSS subteam, led by a Storm Tide Monitoring POC, will hold their call at 0800 Eastern Time, one hour prior to the daily FRT call held at 0900. The NOAA briefing on the storm surge call will be focused on the hurricane track and the latest SLOSH (storm surge) model outputs. The NOAA briefing will be followed by discussion of deployment locations, logistical needs, and coordination with non-federal "surge chasers" that collect data complimentary to USGS data collection. The need for separate inland flood team coordination calls will be determined by the NFC.

Although the main storm response activities are performed in the field, there are several other specific activities that support the FRT and satisfy the objectives of the SRT. These include coordination of geospatial activities, employee reporting, submission of activity reports, budget coordination, and communication products. The role of the Geospatial Information Response Team (GIRT) is described in Appendix B.

b. Pacific Storms

The basic concept of operations will be the same as for Atlantic and Gulf of Mexico storms with the exception of coordination at the storm team leader level and the time of daily conference calls shifting from 0900 Eastern to 0900 Pacific. The USGS Pacific (PR) and USGS Northwest Region (NWR) have played a vital coordination role in dealing with past storm events. To take advantage of the already well developed network of response partners, the Storm Team Leader will work through the PR and NWR offices to coordinate the overall USGS response to storm events. See Appendix B for more information on the character of Pacific coast storms and the response roles the USGS regions have played during past events.

8. Employee Status Reporting

The safety and well-being of employees during response activities and after storm passage is a great concern to the Bureau. During an emergency event that requires office closures or evacuations, employees are expected to notify their immediate supervisor of their status, in accordance with their local emergency instructions and plans. Supervisors should provide employees with up-to-date information about changes in reporting, duty requirements, and leave status. The USGS is implementing an emergency communication service. We realize that post-event communication may be difficult, however all employees should be in touch as soon as it is safe to do so. This will allow us to account for all employees, address continuity of operations issues, and support communities adversely impacted by natural hazards. Specific information on how to report your status in the case of an emergency will be provided prior to the start of each annual hurricane season.

9. Storm Team Reporting

Storm Team Leaders have the responsibility of reporting to the HREC by 4 pm daily throughout the activation of a SRT, and as required prior to and after a storm. Content will include FRT highlights and requests for resources, information, and (or) guidance. The Storm Team Lead, or a designee, has responsibility for providing a summary of significant USGS activities to the Bureau Emergency Management Coordinator by Noon ET each day during a storm event. This report contains information distilled from Storm Team daily conference calls, reports via web applications (to be developed), other written or verbal communications, and other reliable sources. The Bureau Emergency Management Coordinator, or a designee, has responsibility for providing a summary of significant USGS activities to the DOI Watch Office by 1:00 PM ET each day during a storm event. The stated reporting times may change as required by the Department. Major events or incidents will be reported as soon as learned about irrespective of established reporting times.

The activity of summarizing damages to USGS assets is initiated on a storm by storm basis. Science Centers and Offices are prepared to capture and substantiate damage information and provide this information to the Storm Team Leader as requested. Substantial infrastructure losses in a regional area could result in preparation of a request for supplemental funding. Any expectation of supplemental funding mandates comprehensive records of losses and replacement costs, and the labor used in recovery efforts. Science Centers and Offices are prepared to provide accounting documents to the Budget Office as requested.

The Office of Communications will facilitate dissemination of USGS information and products as appropriate, and include press releases, fact sheets on storm effects of the impacted areas, geospatial information coverage including LIDAR and aerial imagery coverage, real-time web-enabled data, and other documents as necessary and appropriate. In addition, the Storm Team Leaders and Area Response POC's will produce a summary of USGS activities after each season that will include a list of prioritized Lessons Learned and Action Items for the upcoming season. Products will be disseminated on USGS internal and public websites, depending upon the intended audience.

10. Cost Accounting

Per USGS AEI instructional memo 2004-14 (URL: <http://internal.usgs.gov/ops/ofs/fop-handbook/FOPindex.html>, chapter 10.5), each science center engaged in the storm or flood response will establish an 08000 account for each emergency response event and charge to it appropriate center response expenses, including salary, overtime, travel, and other purchases regardless of whether or not there exists an expectation that the expenses will be reimbursed by the Region, the Bureau, or a Congressional supplemental. As a rule of thumb, expenses that are not debited to the 08000 accounts in a timely fashion will not be eligible for reimbursement. To facilitate record keeping and planning, science centers will also establish for the 08000 accounts forward looking budgets for expenses that can be reasonably anticipated.

For expenses incurred in support of a Federal Emergency Management Agency mission assignment, science centers will establish standard OFA reimbursable accounts. In general, science center personnel and units who are primarily dependent on reimbursable funding may charge expenses for salary and overhead.

APPENDIX A

Background Information - Pacific Coast Storms

The storm season on the U.S. Pacific Coast generally occurs from late October through the end of March for most of California, Nevada, and Utah. The most damaging storms in these states (including Oregon and Washington) take the form of "atmospheric rivers," narrow but extremely long bands of moisture that can funnel, in some cases, the equivalent of several Mississippi Rivers of wind and rain into the U.S. Pacific Coast. The storm season for Arizona, Nevada, (New Mexico) Utah, and portions of southern California extends from early late-June through September. These damaging storms are known as "monsoons." Both atmospheric rivers and monsoons in the U.S. Southwest tend to follow the occurrence of wildfire, increasing the occurrence of debris flows and ash runoff that can compromise water quality and endanger sensitive species. Hawaii's hurricane season is typically from June through November. The Northern Mariana is located in "Typhoon Alley" with the greatest potential for tropical storms and typhoons from October through December.

Because of its long-standing and on-going regional connections to other state, federal and local agencies, the USGS Pacific Region (PR) has often been called upon to coordinate storm response. This occurred following the 2007 Southern California Wildfires, the 2009 Station Fire, and the 2011 Arizona and New Mexico Wildfires. Each of these events were characterized by large storms following massive wildfires. In each case, the USGS actions were extraordinary, requiring intense actions and funding coordinated by the regional office. To coordinate these storms the PR participates in state storm emergency management groups or convenes teleconferences that bring together USGS managers, scientists and field crews. Experts from NOAA and public utilities were invited to attend, gather and share information. The PR also chairs the Department of Interior Emergency Response Coordination Council and where appropriate invites members to attend storm coordination meetings. The PR also provides situational awareness to the HREC.

APPENDIX B

Geospatial Information Response Team (GIRT)

The primary purpose of the Geospatial Information Response Team (GIRT) is to ensure streamlined and responsive coordination and timely availability of geospatial information for effective coastal storm response for emergency responders, land and resource managers, and scientific analysis. The GIRT is responsible for putting in place and monitoring procedures for geospatial data acquisition, processing, and archiving; data discovery, access, and delivery; anticipating geospatial needs; and other related geospatial products and services. An integral part of the Storm Response Team, the GIRT is focused on supporting the Team, other internal and external customers, and the public. The chair of the GIRT is an active member of the Storm Response Team and is the communication link between the Storm Team and the USGS National Geospatial Liaison Network.

STORM RESPONSE ORGANIZATIONAL CHART
(ILLUSTRATES TRANSITION BETWEEN RESPONSE TEAMS FROM PRE-EVENT TO POST-EVENT)

